IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:	10/679,260		
In re:	Cheng	Art Unit:	3754
Filed:	10/07/2003	Examiner:	Hook, James F.
For:	A HOSE FOR CONVEYING FLUIDS CONTAINING HYDROGEN		
Docket No.:	65,523-007 (60,680-891)	Conf. No.:	3121

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

Dear Sir:

Appellant submits the following Appeal Brief pursuant to 37 C.F.R. § 41.37 for consideration by the Board of Patent Appeals and Interferences. Appellant filed a first Notice of Appeal on February 6, 2006, and subsequently filed an Appeal Brief on April 6, 2006. The Examiner reopened prosecution after Appellant's Appeal Brief was filed by finally rejecting claims 1-12 in an Office Action issued on October 29, 2007. A second Notice of Appeal was filed on January 29, 2008. The previously paid Appeal Brief fee of $500.00 may be applied to the new appeal. MPEP § 1207.04. Therefore, please charge only the difference between the increased Appeal Brief fee ($510.00) and the amount previously paid ($500.00), namely a total of $10.00, to deposit account 04-2223. Further, please charge any additional fees required or credit any overpayment to the same deposit account.

CERTIFICATE OF TRANSMISSION VIA EFS-WEB

I hereby certify that this Appeal Brief is being transmitted to the United States Patent and Trademark Office via the Office's electronic filing system EFS-Web addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the 25th day of March 2008.

/Koleen Pluta/
Koleen Pluta

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U.S. Department of Commerce United States Patent and Trademark Office, Manual of Patent Examining Procedure (8th ed., August 2001, rev. May 2004) 6, 8-10, 13-15

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I. REAL PARTY IN INTEREST

Nobel Plastiques, S.A. is the assignee of all rights in this invention and is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

Neither Appellant, Appellant's representatives, nor Nobel Plastiques, S.A. (the assignee) knows of any appeal, interference or judicial proceeding that may be related to, that will directly affect or that will be directly affected by or have a bearing on the Board's decision in the present appeal.

III. STATUS OF CLAIMS

Claims 1-12 are presently pending in this application. Claims 1-12 have been finally rejected, and the rejection of claims 1-12 is being appealed.

IV. STATUS OF AMENDMENTS

No amendment has been filed subsequent to the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This invention relates to a hose for conveying fluids (1—Fig. 1) and, in particular, to a hose for conveying fluids containing hydrogen (1—Fig. 1).[1] The hose (1—Fig. 1) is provided to transport hydrogen, or a mixture of gases containing hydrogen following reformation of a hydrocarbon, to a fuel cell onboard a motor vehicle in order to produce electricity to power the motor vehicle.[2] As set forth in independent claim 1, the hose

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[1] *See* Specification at page 1, lines 2-3.

[2] *See* Specification at page 1, lines 15-34 and page 2, lines 3-4.

(1—Fig. 1) comprises three hydrogen barrier layers which are from the inside toward the outside: (1) a layer comprising a fluorine-based thermoplastic material (2—Fig. 1); (2) a layer comprising a vinyl ethylene alcohol (3—Fig. 1); and (3) a layer comprising a polybutylene terephthalate (4—Fig. 1).[3]

The fluorine-based thermoplastic material layer (2—Fig. 1) serves as a hydrogen barrier.[4] In an exemplary embodiment and as set forth in dependent claims 2-4, the fluorine-based thermoplastic material layer (2—Fig. 1) may comprise ethylene fluorinated ethylene propylene (EFEP), ethylene tetrafluoroethylene (ETFE), or polyvinylidene fluoride (PVDF).[5]

The vinyl ethylene alcohol layer (3—Fig. 1) serves as a hydrogen barrier and limits the permeability of oxygen through the hose.[6]

The polybutylene terephthalate layer (4—Fig. 1) serves as a hydrogen barrier.[7] The layer also services as an outer protective layer.[8]

As set forth in dependent claim 5, adhesive layers (5, 6—Fig. 1) may be disposed between any two of layers (2, 3, 4—Fig. 1) for bonding any two of layers (2, 3, 4—Fig. 1) together.[9] The adhesive layers (5, 6—Fig. 1) may comprise adhesives presenting properties of adhesion with the materials comprising the layers (2, 3, 4—Fig. 1).[10] As set forth in dependent claim 6, the adhesive (comprising layers 5, 6—Fig. 1) may be based on polyurethane.[11]

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[3] *See* Specification at page 2, lines 10-14 and page 3, lines 8-15.

[4] *See* Specification at page 2, lines 19-20.

[5] *See* Specification at page 3, lines 9-12.

[6] *See* Specification at page 2, lines 22-27.

[7] *See* Specification at page 2, lines 28-29.

[8] *See* Specification at page 2, lines 30-31.

[9] *See* Specification at page 3, lines 16-21.

As set forth in independent claim 7, the invention also relates to a fuel cell assembly including a hose for transporting fuel consisting of hydrogen (1—Fig. 1).[12] The fuel cell assembly includes a source of fuel, the fuel consisting of hydrogen.[13] The fuel cell assembly also includes a fuel cell.[14] The fuel cell assembly also includes a hose (1—Fig. 1) for transporting fuel between the source of fuel and the fuel cell.[15] The hose (1—Fig. 1) comprises three hydrogen barrier layers which are from the inside toward the outside: (1) a layer comprising a fluorine-based thermoplastic material (2—Fig. 1); (2) a layer comprising a vinyl ethylene alcohol (3—Fig. 1); and (3) a layer comprising a polybutylene terephthalate (4—Fig. 1).[16]

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. The rejection of claims 1, 3, and 4 as unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 6,240,970 ("Ostrander et al.") in view of U.S. Patent

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[10] *See* Specification at page 3, lines 31-34.

[11] *See Specification* at page 3, lines 21-22.

[12] *See Specification* at page 1, lines 25-29 and page 2, lines 3-5.

[13] *See Specification* at page 1, lines 18-24.

[14] *See Specification* at page 1, lines 15-17.

[15] *See Specification* at page 1, lines 25-29 and page 2, lines 3-5.

[16] *See* Specification at page 2, lines 10-14 and page 3, lines 8-15.

Publication No. U.S. 2003/0087053-A1 ("Fukushi") and U.S. Patent No. 5,937,911 ("Kodama et al.").

2. The rejection of claim 2 as unpatentable under 35 U.S.C. § 103(a) over Ostrander et al. in view of Fukushi and Kodama et al. and further in view of U.S. Patent No. 6,776,195 ("Blasko et al.").

3. The rejection of claims 5-6 as unpatentable under 35 U.S.C. § 103(a) over Ostrander et al. in view of Fukushi and Kodama et al. and further in view of U.S. Patent No. 6,089,278 ("Nishino et al.").

4. The rejection of claims 7-12 as unpatentable under 35 U.S.C. § 103(a) over Ostrander et al. in view of Fukushi and U.S. Patent Publication No. 2001/0006712 ("Hibino et al.").

5. The rejection of claims 7-12 as unpatentable under 35 U.S.C. § 103(a) Hibino et al. in view of Ostrander et al.

VII. ARGUMENTS

Claims 1, 3, and 4 stand rejected as unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 6,240,970 ("Ostrander et al.") in view of U.S. Patent Publication No. U.S. 2003/0087053-A1 ("Fukushi") and U.S. Patent No. 5,937,911 ("Kodama et al."). Claim 2 stands rejected as unpatentable under 35 U.S.C. § 103(a) over Ostrander et al. in view of Fukushi and Kodama et al. and further in view of U.S. Patent No. 6,776,195 ("Blasko et al."). Claims 5-6 stand rejected as unpatentable under 35 U.S.C. § 103(a) over Ostrander et al. in view of Fukushi and Kodama et al. and further in view of U.S. Patent No. 6,089,278 ("Nishino et al."). Claims 7-12 stand rejected as unpatentable under 35 U.S.C. § 103(a) over Ostrander in view of Fukushi and U.S. Patent Publication

No. 2001/0006712 ("Hibino et al.). Claims 7-12 also stand rejected as unpatentable under 35 U.S.C. § 103(a) over Hibino et al. in view of Ostrander. Appellant respectfully submits that the rejection of claims 1-12 under 35 U.S.C. § 103(a) is improper because one of ordinary skill in the art would not seek to combine the teachings of Ostrander et al., Fukushi, and Kodama et al. and/or the teachings of Ostrander et al., Fukushi, and Hibino et al. and/or the teachings of Hibino et al. and Ostrander et al.

Any obvious determination must be supported by evidence.[17] "The key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit." *Id.* The Federal Circuit has also found that even in cases where the prior art is closely analogous to the invention at issue, there must be "objective evidence" of a particular rationale to select and combine the prior art. *In re Lee*, 277 F.3d 1338, 1343-45 (Fed. Cir. 2002).

Appellant claims a hydrogen feeding hose having a unique composition of three layers. Every cited reference discloses hoses with compositions failing to disclose multiple limitations recited in the claims. The Examiner, however, picks or chooses individual limitations from multiple references and combines them—generally with only conclusory statements to rationalize why one of ordinary skill in the art would combine

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[17] *KSR International Co. v. Teleflex, Inc*, 127 S. Ct. 1727, 167 L.E.2d 705, 82 USPQ2d 1385, 1396 (2007) reiterated that the framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 includes the following factual inquires: (1) determining the scope and content of the prior art; (2) ascertaining the differences between the claimed invention and the prior art; and (3) resolving the level of ordinary skill in the pertinent art. Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., Federal Register, Vol. 72, No. 195 (October 10, 2007). The Examiner appears to have made no determination of the level of ordinary skill in the art.

individual elements of multiple references to arrive at the claimed invention when no single reference is even remotely similar to the claimed invention. A proper obviousness rejection requires specific findings of fact. The Examiner's conclusions are wholly unsupported by any factual findings and the rejection should be overruled.

"Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case." MPEP § 2141 (emphasis in original).

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations.

MPEP § 2143. Appellant submits that one or ordinary skill in the art would not be motivated to combine the teachings of Ostrander et al., Fukushi, and Kodama et al. and/or the teachings of Ostrander et al., Fukushi, and Hibino et al. and/or the teachings of Hibino et al. and Ostrander et al. under any of the rationales set forth under the *KSR* framework.

A. Rejection of Claims 1-6 Under 35 U.S.C. § 103(a)

1. Rejection of Claims 1, 3, and 4

Claims 1, 3, and 4 stand rejected as unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 6,240,970 ("Ostrander et al.") in view of U.S. Patent Publication No. U.S. 2003/0087053-A1 ("Fukushi") and U.S. Patent No. 5,937,911 ("Kodama et al.").

Independent claim 1 recites: "A hydrogen feeding hose for a fuel cell, the hose comprising three hydrogen barrier layers which are from the inside towards the outside: a layer comprising a fluorine-based thermoplastic material; a layer comprising a vinyl ethylene alcohol; and a layer comprising a polybutylene terephthalate." (emphasis added).

Ostrander et al. discloses several embodiments of a multilayer hose. In one or more embodiments, an inner layer 14 of the hose is made from a fluoroplastic material. Col. 6, lines 47-55. In one or more embodiments, an intermediate layer 16 of the hose may be made from EVOH. Col 10, lines 28-43. The Examiner acknowledges, however, that Ostrander et al. fails to disclose: (1) a hose in which an intermediate EVOH layer is outside a fluorine-based thermoplastic layer (rather, the Examiner notes that the EVOH layer is only disclosed in embodiments where the inner layer 14 is made from polyamides); and (2) a hose having an outer layer made from PBT (rather, the outer layer 18 is made from polyamides). Accordingly, the only limitation of Appellant's claim found in the base reference is a layer of fluorine-based thermoplastic.

With respect to the use of an intermediate EVOH layer outside a fluorine-based thermoplastic layer, the Examiner cites Fukushi and argues that "[i]t would have been obvious to one skilled in the art" to modify the Ostrander et al. embodiments having a flurothermoplastic inner layer to include an EVOH intermediate layer "to provide further barrier properties and protect against the permeation of gases . . . to make the hose more useful." Office Action mailed October 6, 2005, page 3 and Office Action mailed October 29, 2007, page 3.

"A statement that modification of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima* *facie* case of obviousness without some objective reason to combine the teachings of the references." MPEP § 2143.01 (citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)) (emphasis in original).[18] The Examiner has failed to establish an objective basis for combining the teachings of Ostrander et al. and Fukushi.

The rationale proffered by the Examiner does not evidence an objective reason to combine the cited references. The tubing of Ostrander et al. already serves to prevent or reduce the permeation of hydrocarbons therethrough, so there is no suggestion or motivation to change from an existing structure in Ostrander et al. that already accomplishes the function. Further, the Examiner acknowledges that Ostrander et al. discloses the use of EVOH in combination with a polyamide inner layer, but does not disclose the use of EVOH in combination with fluorine based thermoplastics. Accordingly, while Ostrander et al. discloses a number of different materials and a number of different combinations of materials for the various layers of the tubing, Ostrander et al. never contemplates the use of fluorinated thermoplastics in combination with EVOH, and instead, the combination of fluorinated thermoplastics with EVOH is implicitly dismissed in Ostrander et al. Under MPEP § 2145, a prior art reference that teaches away from the claimed invention is a significant factor to be considered in determining obviousness. By implicitly dismissing the combination of fluorinated thermoplastics with EVOH, Ostrander et al. teaches away from the inventive combination. The Examiner has indicated that "[e]xclusion . . . is not considered explicit

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[18] "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." MPEP § 2143.01 (citing *KSR International Co. v. Teleflex, Inc*, 127 S. Ct. 1727, 167 L.E.2d 705, 82 USPQ2d 1385, 1396 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)).

teaching." Office Action mailed April 20, 2005, page 6. However, Appellant submits that the failure to acknowledge the combination of fluorine-based thermoplastics in connection with EVOH when EVOH is specifically addressed in connection with layers of materials other than fluorine-based thermoplastics is a strong teaching away of these materials in combination.

With respect to the failure of Ostrander et al. to teach a hose with an outer PBT layer, the Examiner cites Kodama et al. and argues that it would have been obvious to further modify Ostrander et al. to include an outer layer made from PBT. The Examiner asserts that polyamides and PBT "are equivalent materials used interchangeably." Office Action mailed October 6, 2005, page 4 and Office Action mailed October 29, 2007, page 4. The Examiner further states that "PBT would have certain beneficial qualities over the polyamide for use in specific environments and would provide different properties for use in different environments to make the hose more useful for a wider range or [sic] applications." *Id.* These statements are conclusory and unsupported by any evidence of record.

"The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness." MPEP § 2142 (emphasis in original). The Examiner's statements regarding interchangeability do not identify a sufficient suggestion or motivation in the references for modifying Ostrander et al. to include a PBT layer. "In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art . . . and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents." MPEP § 2144.06. The Examiner has failed to provide sufficient evidence that the equivalency is recognized in the prior art. The Examiner has only referred to the fact that one skilled in the art would recognize the equivalence of materials based upon the teachings of the prior art and would know the properties of polyamides versus PBT. Office Action mailed October 29, 2007, page 8.

Because the Examiner has found no base reference that is remotely similar to the claimed invention and must instead rely on multiple references each having only an individual elements found in the claims, Appellant respectfully submits that at best, the Examiner has sought to argue that the invention, including a hose having (1) a layer comprising EVOH and (2) a layer comprising PBT outside of the EVOH layer is "obvious to try." To reject a claim based on this rationale, the Examiner must establish that there is a finite number of identified, predictable solutions and that there is a reasonable expectation of success. Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., Federal Register, Vol. 72, No. 195 (October 10, 2007). Accordingly, when utilizing this rationale for rejection of a claim, in addition to resolving the Graham factual inquires, the Examiner must make the following findings: (1) at the time of invention, there was a recognized problem or need in the art; (2) there are a finite number of identified, predictable potential solutions to the recognized need or problem; (3) that one of ordinary skill in the art could have pursued the known potential solutions with a reasonable expectation of success; and (4) any additional findings that may be necessary to explain the conclusion of obviousness. *Id.* If any of these findings cannot be made, then an "obvious to try" rationale may not be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art. *Id.* The Examiner has not set forth any of these findings. Appellant respectfully submits that in particular at least the Examiner has failed to establish that there is a finite number of predictable solutions to a perceived problem or need that would support the addition of an EVOH layer and a PBT outer layer to the base reference, Ostrander et al. Appellant respectfully submits that its invention comprising a hose with three layers from the inside toward the outside of a fluorine-based thermoplastic material, EVOH, and PBT is the product of innovation, not the mere pursuit of a finite number of potential combinations of materials.

Because one of ordinary skill in the art would not be motivated to combine the teachings of Ostrander et al., Fukushi, and Kodama et al., Appellant respectfully submits that the rejection of claim 1 under 35 U.S.C. § 103(a) is improper. Accordingly, Appellant requests that the rejection be overturned.

2. Rejection of Claim 2

Claim 2 depends from independent claim 1 and therefore incorporates all of the limitations recited in claim 1. For the reasons stated hereinabove in Section VII.A.1, therefore, Appellant submits that the rejection of claim 2 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

3. Rejection of Claims 5 and 6

Claims 5 and 6 depend from independent claim 1 and therefore incorporate all of the limitations recited in claim 1. For the reasons stated hereinabove in Section VII.A.1, therefore, Appellant submits that the rejection of claims 5-6 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

B. Rejection of Claims 7-12 Under 35 U.S.C. § 103(a)

1. Rejection of Claims 7-12 Over Ostrander et al. in View of Fukushi and Hibino et a.

Claims 7-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ostrander et al. in view of Fukushi and Hibino et al. Independent claim 7 recites: "A fuel cell assembly, comprising: a source of fuel, said fuel consisting of hydrogen; a fuel cell; and a hose transporting said fuel between said source and said fuel cell, said hose comprising three hydrogen barrier layers which are from the inside towards the outside: a layer comprising a fluorine-based thermoplastic material; a layer comprising a vinyl ethylene alcohol; and a layer comprising a polybutylene terephthalate." (emphasis added).

Ostrander et al. discloses several embodiments of a multilayer hose. In one or more embodiments, an inner layer 14 of the hose is made from a fluoroplastic material. Col. 6, lines 47-55. In one or more embodiments, an intermediate layer 16 of the hose may be made from EVOH. Col 10, lines 28-43. The Examiner acknowledges, however, that Ostrander et al. fails to disclose: (1) a hose in which an intermediate EVOH layer is outside a fluorine-based thermoplastic layer (rather, the Examiner notes that the EVOH layer is only disclosed in embodiments where the inner layer 14 is made from polyamides); (2) using such a hose in combination with a fuel cell with a source of hydrogen fuel; and (3) forming the outer layer of PBT (rather, the outer layer 18 is made from polyamides).

With respect to the use of an intermediate EVOH layer outside a fluorine-based thermoplastic layer, the Examiner cites Fukushi and argues that "[i]t would have been obvious to one skilled in the art" to modify the Ostrander et al. embodiments having a flurothermoplastic inner layer to include an EVOH intermediate layer "as such is known in the art to provide further barrier properties and protect against permeation of gases as suggested by Fukushi to make the hose more useful." Office Action mailed October 29, 2007, page 6.

For the reasons stated hereinabove in Section VII.A.1, namely, that one of ordinary skill in the art would not be motivated to combine Ostrander et al. and Fukushi, Appellant submits that the rejection of claims 7-12 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

With respect to the failure of Ostrander et al. to teach a hose with an outer PBT layer, the Examiner cites Hibino et al. and argues that "[i]t would have been obvious to one skilled in the art to substitute PBT for use in the outer layer of Ostrander in place of polyamide as suggested by Hibino as such are equivalent materials used interchangeably,, and where PBT would have certain beneficial qualities over the polyamide for use in specific environments and would provide different properties for use in difference environments to make the hose more useful for a wider range of applications." Office Action mailed October 29, 2007, page 6. Appellant respectfully disagrees.

"The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness." MPEP § 2142 (emphasis in original). The Examiner has failed to identify any of those beneficial qualities or state why they would lead one of ordinary skill in the art to modify Ostrander et al. Further, the Examiner's statements regarding interchangeability do not identify a sufficient suggestion or motivation in the references for modifying Ostrander et al. to include a PBT layer. "In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art . . . and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents." MPEP § 2144.06. The Examiner has failed to provide sufficient evidence that the equivalency is recognized in the prior art. The Examiner has only referred to the fact that one skilled in the art would recognize the equivalence of materials based upon the teachings of the prior art and would know the properties of polyamides versus PBT. Office Action mailed October 29, 2007, page 6.

Because one of ordinary skill in the art would not be motivated to combine Ostrander et al. and Hibino et al, Appellant further submits that the rejection of claims 7-12 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

Claims 8-12 depend from independent claim 7 and therefore incorporate all of the limitations recited in claim 7. For all of the reasons stated hereinabove in Section VII.B, therefore, Appellant submits that the rejection of claims 8-12 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

2. Rejection of Claims 7-12 Over Hibino et al. in View of Ostrander et al.

Claims 7-12 have also been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hibino et al. in view of Ostrander et al. The Examiner acknowledges that Hibino et al. fails to disclose (1) the use of EVOH as an intermediate barrier layer; (2) using PVDF as one of the fluororesin used for the inner layer; and (3) providing a polyurethane adhesive layer. The Examiner asserts that it would have been obvious to modify the intermediate barrier layer of Hibino by substituting EVOH as such is another known equivalent intermediate barrier layer used in combination with fluororesins and

PBT in fuel hoses. Office Action mailed October 29, 2007, page 7. Appellant respectfully disagrees.

Hibino et al. discloses a multilayer hose which is usable in fuel cells, but discloses that the use of a metal barrier layer is an essential feature of the hose. In particular, Hibino et al. specifically notes that organic materials (e.g., fluororesins) may not be able to satisfy requirements for fluid impermeability and that processing organic materials may be expensive and undesirable (*see* paragraph [0005]). Hibino et al. thus requires that the hose have a barrier layer of metal, such metal serving to ensure that the hose have a high fluid impermeability. (*see* paragraph [0006]). In order to address the need for flexibility and the ability to absorb vibration, Hibino et al. discloses the use of a resin-coated metal barrier layer. (*see* paragraphs [0007]-[0008]). Hibino et al. states: "This invention provides such a composite metal-resin hose." (*see* paragraph [0008]).

"It is improper to combine references where the references teach away from their combination." MPEP § 2145 (citing *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). Hibino et al. clearly teaches away from modification of a metal barrier layer to a non-metal, organic layer as described above. "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." MPEP § 2141.02 citing (*W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). When considered in its entirety, Hibino et al. criticizes or discredits the use of non-metal barrier layers in multi-layer hoses and constitutes a teaching away from any combination that would include a non-metal barrier layer. Accordingly, one of ordinary skill in the art would not be motivated to modify Hibino et al. to remove the metal barrier layer and replace it with an EVOH layer, as such modification would go against the express teaching of Hibino et al.

Because one of ordinary skill in the art would not be motivated to combine Hibino et al. and Ostrander et al, Appellant submits that the rejection of claim 7 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

Claims 8-12 depend from independent claim 7 and therefore incorporate all of the limitations recited in claim 7. For the reasons stated hereinabove in Section VII.B, therefore, Appellant submits that the rejection of claims 8-12 under 35 U.S.C. § 103(a) is improper and requests that the rejection be overturned.

Respectfully submitted,
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VIII. CLAIMS APPENDIX

1. A hydrogen feeding hose for a fuel cell, the hose comprising three hydrogen barrier layers which are from the inside towards the outside:

a layer comprising a fluorine-based thermoplastic material;

a layer comprising a vinyl ethylene alcohol; and

a layer comprising a polybutylene terephthalate.

2. A hose according to claim 1, wherein the fluorine-based thermoplastic material is ethylene fluorinated ethylene propylene.

3. A hose according to claim 1, wherein the fluorine-based thermoplastic material is an ethylene tetrafluoroethylene.

4. A hose according to claim 1, wherein the fluorine-based thermoplastic material is a polyvinylidene fluoride.

5. A hose according to claim 1, wherein at least two of the layers are bonded together by an adhesive layer.

6. A hose according to claim 5, wherein the adhesive is based on polyurethane.

7. A fuel cell assembly, comprising:

a source of fuel, said fuel consisting of hydrogen;

a fuel cell; and

a hose transporting said fuel between said source and said fuel cell, said hose, comprising three hydrogen barrier layers which are from the inside towards the outside: a layer comprising a fluorine-based thermoplastic material; a layer comprising a vinyl ethylene alcohol; and a layer comprising a polybutylene terephthalate.

8. A hose according to claim 7, wherein the fluorine-based thermoplastic material is ethylene fluorinated ethylene propylene.

9. A hose according to claim 7, wherein the fluorine-based thermoplastic material is an ethylene tetrafluoroethylene.

10. A hose according to claim 7, wherein the fluorine-based thermoplastic material is a polyvinylidene fluoride.

11. A hose according to claim 7, wherein at least two of the layers are bonded together by an adhesive layer.

12. A hose according to claim 11, wherein the adhesive is based on polyurethane.

IX. EVIDENCE APPENDIX

[NONE]

X. RELATED PROCEEDINGS APPENDIX

[NONE]

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